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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,363	06/20/2003	Sumio Kawai	IPO-P1794	7094
3624	7590	11/28/2007		
VOLPE AND KOENIG, P.C. UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			EXAMINER MISLEH, JUSTIN P	
			ART UNIT 2622	PAPER NUMBER
			MAIL DATE 11/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/600,363</p>	<p>Applicant(s)</p> <p align="center">KAWAI, SUMIO</p>	
	<p>Examiner</p> <p align="center">Justin P. Misleh</p>	<p>Art Unit</p> <p align="center">2622</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 - 5 is/are allowed.
- 6) ☒ Claim(s) 6, 8 - 16, 18 - 21, 23 - 28, 30, and 31 is/are rejected.
- 7) ☒ Claim(s) 7, 17, 22 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/20/03</u> <u>1/16/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. The species election filed on 11 May 2007 elects Claims 1 – 31 as drawn to the elected invention of Species I (Figures 5 and 6). However, after careful consideration, the Examiner determined that there are no patentably distinct species in the present application and all claims will be examined. Accordingly, the reply filed September 10, 2007 will be entered and the claims filed therein will be examined.

Specification

2. The substitute specification filed January 16, 2004 is in compliance with 37 CFR 1.125(b) and (c) and has been entered.

Drawings

3. The drawings are objected to because lack of consistency.
4. For example, elements 16, 24b, 24d, and 24e are described with respect to figures 2, 3, 5, and 6; however, are shown only in figures 5 and 6. The Examiner updating the drawing to be consistent with the specification.
5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing

should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the Examiner, Applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 6, 8 – 16, 18 – 21, 23 – 28, 30, and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant’s Conceded Prior Art (ACPA) in view of Ito et al. (US 5,602,682).

Applicant's Conceded Prior Art (ACPA)

In the substitute specification, as shown in figure 10 and in paragraphs 0007 – 0009 and 0035 – 0040, Applicant at least concedes:

“[0007] A conventional digital camera includes an optical low-pass filter (called optical LPF hereinafter), containing crystal or the like having a double refraction characteristic, in the front of the surface of an image pickup element in order to reduce false color (such as *moire*) of a high frequency component of a shot image. A single lens reflex digital camera system has been provided in which a lens (lens barrel) is interchangeable with respect to the camera body. Image pickup elements having different numbers of pixels, that is, having different pixel pitches are built in multiple bodies of the lens-interchangeable digital camera system. Furthermore, multiple kinds of interchangeable lens can be attached to the body.

“[0008] An optical LPF having thickness corresponding to the pixel pitches is provided in the front of the surface of the image pickup element having different pixel pitches as described above in the single lens reflex camera body.

“[0009] The thickness of the optical LPF is set in accordance with the pixel pitch of the image pickup element as described above because a luminous flux having passed through the optical LPF is divided into non-refractive normal light and abnormal light (double refractive) and the divided luminous fluxes must be launched into adjacent pixels of the image pickup element in order to prevent the occurrence of the *moire*. Therefore, the thickness of the optical LPF must be changed in accordance with the pixel pitch.”

Claims

Independent Claims 10, 12, 14, 15, 19 – 21, 27, 28, and 31 each and **dependent Claims 11, 16, and 23** each appear to be fully encompassed by **Claim 6**. Accordingly, they will be rejected together.

8. For **Claims 6, 10 – 12, 14 – 16, 19 – 21, 23, 27, 28, and 31**, as stated above, Applicant admits as conventional, a lens-interchangeable digital camera system, comprising:

a first camera body including a first image pickup element having a first pixel pitch and a first optical low pass filter having a thickness determined in accordance with the first pixel pitch of the first image pickup element;

an interchangeable lens attachable to the first camera body, having a correction function for optimizing the curvature-of-field aberration on an image-forming surface of the first image pickup element when the interchangeable lens is attached to the first camera body; and

a second camera body to which the interchangeable lens can be attached, including a second image pickup element having a second pixel pitch different from the first pixel pitch, a second optical low pass filter having a thickness determined in accordance with the second pixel pitch and being thinner than the first optical low pass filter.

However, ACPA does not admit as conventional, a compensating optical system, included in the second camera body, for correcting the curvature-of-field aberration on the image-forming surface of the second image pickup element caused due to the difference in thickness of the first optical low pass filter and the second optical low pass filter.

On the other hand, Ito et al. also disclose an lens-interchangeable camera system wherein an interchangeable lens barrel is common to a plurality of camera bodies. More specifically, Ito et al. provide a first camera body (color) and a second camera body (monochrome), wherein the camera bodies have different kind of light receiving elements, and different refractive indexes or thicknesses of filters provided in front of the respective light receiving elements (see column 1, lines 17 – 20). In the second camera body, a glass cover of the light receiving element whose

thickness is 0.8mm is used as a filter and, in the first camera body there is a low-pass filter in addition to the glass cover. The low-pass filter is usually made of a laminated crystal birefringent plate and an infrared filter and has a thickness of about 5 mm, wherein the refractive index of the filters is about 1.5 (see column 1, lines 21 – 27). The filters are provided on the camera body side and there is inevitably a difference of around 5 mm in total thickness between the filters incorporated in each camera body (see column 1, lines 29 – 32).

As shown in the first embodiment (see figures 1 – 4 and column 5, line 17 – column 6, line 67), to compensate for the optical path length differences caused by the difference in filter thickness, Ito et al. provide an aberration correcting plate (22 – figure 1) that is attachable to rear end of the interchangeable lens barrel (11). The thickness of the aberration correcting plate (22) is “substantially identical to that of the filter provided in front of the image pickup device of the color camera body” (see column 5, lines 27 – 31). When the lens barrel (11) with the attached correcting plate (22) is attached to the second camera body (see figure 4), the aberration correcting plate (22) becomes part of the second camera.

Therefore, Ito et al. teach a compensating optical system, included in the second camera body, for correcting the curvature-of-field aberration on the image-forming surface of the second image pickup element caused due to the difference in thicknesses of filters in each of the camera bodies.

Thus, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included the aberration correcting plate as a compensating optical system, as taught by Ito et al., in the lens-interchangeable digital camera system, disclosed by

ACPA, for the advantage of reducing the deterioration of image quality (see column 9, lines 36 – 46).

9. As for **Claims 8 and 9**, as stated above, Applicant admits as conventional, wherein the second pixel pitch is narrower than the first pixel pitch and the second image pickup element has more a greater number of pixels than that of the first image pickup element.

10. As for **Claim 13**, as stated above, Applicant admits as conventional, wherein the first and second optical low pass filters are optical elements having a double refraction characteristic, and the compensating optical system is an optical element having no double refraction characteristic.

11. As for **Claims 18 and 30**, as stated above, Applicant admits as conventional, wherein the thickest optical low pass filter contains crystal.

12. As for **Claims 24 – 26**, Ito et al. teach, as stated above, the thickness of the aberration correcting plate (22) is “substantially identical to that of the filter provided in front of the image pickup device of the color camera body” (see column 5, lines 27 – 31). Therefore, Ito et al. teach wherein the compensating optical system has substantially the same thickness as the difference in thickness between the optical low pass filter in the reference camera body and an optical low pass filter in the given camera body and wherein the optical low pass filter in the given camera body has a thickness different from that of an optical low pass filter in the reference camera body and wherein the optical low pass filter in the given camera body is thinner than an optical low pass filter in the reference camera body.

Allowable Subject Matter

13. **Claims 1 – 5** are allowed and **Claims 7, 17, 22, and 29** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art discloses a lens-interchangeable digital camera system, including a first camera body including a first image pickup element having a first pixel pitch and a first optical low pass filter having a thickness determined in accordance with the first pixel pitch of the first image pickup element; an interchangeable lens attachable to the first camera body, having a correction function for optimizing the curvature-of-field aberration on an image-forming surface of the first image pickup element when the interchangeable lens is attached to the first camera body; and a second camera body to which the interchangeable lens can be attached, including a second image pickup element having a second pixel pitch different from the first pixel pitch, a second optical low pass filter having a thickness determined in accordance with the second pixel pitch and being thinner than the first optical low pass filter, and a compensating optical system for correcting the curvature-of-field aberration on the image-forming surface of the second image pickup element caused due to the difference in thickness of the first optical low pass filter and the second optical low pass filter.

However, with respect to **Claims 1, 7, 17, and 29**, the closest prior art does not teach or fairly suggest wherein the first camera body including a first image pickup element has a pixel pitch of about 7 microns and a first optical low pass filter having a thickness determined based on the pixel pitch of about 7 microns.

However, with respect to **Claim 22**, the closest prior art does not teach or fairly suggest wherein the compensating optical system has a refractive index substantially equal to that of crystal.

Cited Prior Art

15. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure for the following reasons:

- **US 7,193,651 B2** discloses a camera system with multiple camera bodies and a common interchangeable lens to all the camera bodies.
- **US 6,327,085 B1 and US 6,963,448 B1** each disclose an optical filter having a thickness based on the pixel pitch on a image pickup device.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Lin Ye can be reached on 571.272.7372. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'JM' with a stylized flourish.

Justin Misleh
Examiner, GAU 2622
November 26, 2007